

What is claimed is:

1. An ink jet recording apparatus for forming an image on a recording medium comprising:

a carrying section for carrying the recording medium;

a line head for jetting ink to the recording medium, the head line being provided in a direction approximately perpendicular to a carrying direction of the recording medium which is carried by the carrying section;

an active energy ray radiation section for radiating an active energy ray to the ink jetted on the recording medium to cure the ink; and

a temperature controlling mechanism for controlling the temperature of the recording medium which is carried by the carrying section within a preset target temperature range.

2. The ink jet recording apparatus of claim 1, wherein the active energy ray includes a wavelength component which is out of the visible band wavelength.

3. The ink jet recording apparatus of claim 1, wherein the ink has cationic polymerization characteristics.

4. The ink jet recording apparatus of claim 1,

wherein the temperature controlling mechanism controls a temperature of the recording medium which is carried by the carrying section within the preset target temperature range at least at one of an image forming position facing to the line head where an image is formed on the recording medium by receiving the jetted ink on the recording medium carried by the carrying section, and a position which is upstream position of the image forming position in a carrying direction.

5. The ink jet recording apparatus of claim 1, wherein a heat quantity loss is not more than 15% of a heat quantity which is applied to the recording medium, when the recording medium is carried to the image forming position after received certain heat quantity which is determined by adjusting temperature of the recording medium, in a case of the temperature controlling mechanism being provided only at the upstream position in the carrying direction.

6. The ink jet recording apparatus of claim 4, wherein the upstream position of the image forming position in the carrying direction is from a start point of a printing region to a position which is double widths of the printing region away from the start point.

7. The ink jet recording apparatus of claim 1, wherein the temperature controlling mechanism comprises:

a temperature detecting section for detecting temperature of the recording medium;

a temperature adjusting section for carrying out at least one of heating and cooling of the recording medium which is carried by the carrying section; and

a control section for controlling the temperature adjusting section by comparing a temperature detected by the temperature detecting section with a preset temperature.

8. The ink jet recording apparatus of claim 7, wherein the apparatus further comprises a humidity detecting section for detecting humidity around the recording medium, and the preset temperature is changed according to the detected humidity.

9. The ink jet recording apparatus of claim 8, wherein the preset temperature rises corresponding to an increase of the detected humidity.

10. The ink jet recording apparatus of claim 1, wherein the preset temperature is changed according to the type of the recording medium.

11. The ink jet recording apparatus of claim 1, wherein the temperature adjusting section is in contact with a back surface of a platen with which the recording medium is in contact, the platen keeping the recording medium flat on the printing region.

12. The ink jet recording apparatus of claim 7, wherein the temperature adjusting section comprises a heat roller which is rotatably supported around a shaft and emits heat, and the periphery of the heat roller is in contact with the recording medium along at least 90 degrees of center angle.

13. The ink jet recording apparatus of claim 7, wherein the temperature adjusting section comprises a heat plate which emits heat, and the heat plate is in contact with the recording medium by a component of a force which is generated when carrying the recording medium.

14. The ink jet recording apparatus of claim 1, wherein the temperature adjusting section comprises a peltier element which is used with a heat transfer member for transferring heat to the recording medium, and the heat transfer member is in contact with the recording medium by a component of a force which is generated when carrying the recording medium.

15. The ink jet recording apparatus of claim 7, wherein the temperature adjusting section comprises an air blowing apparatus which directs heated air to the recording medium carried by the carrying section.

16. The ink jet recording apparatus of claim 7, wherein the temperature adjusting section is arranged in the opposite side of the line head across the recording medium which is carried by the carrying section.

17. The ink jet recording apparatus of claim 2, wherein the active energy ray is ultraviolet radiation.

18. The ink jet recording apparatus of claim 1, wherein the amount of a droplet of the ink which is jetted from the line head to the recording medium is 2-15 pl.

19. The ink jet recording apparatus of claim 1, wherein the active energy ray is radiated in 0.001-2.0 seconds after the jetted ink is received on the recording medium.

20. The ink jet recording apparatus of claim 1, wherein radiation of the active energy ray is divided into a plurality of steps.